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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|------------------------|---------------------|------------------|
| 09/993,266   | 11/19/2001  | Robert-Christian Hagen | MAS-FIN-141         | 6384             |
| 24131  | 7590        | 07/14/2005             | EXAMINER            |                  |
| LERNER AND GREENBERG, PA<br>P O BOX 2480<br>HOLLYWOOD, FL 33022-2480 |             |                        | FARAHANI, DANA      |                  |
|  |             |                        | ART UNIT            | PAPER NUMBER     |
|  |             |                        | 2891                |                  |

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/993,266             | HAGEN ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Dana Farahani          | 2891                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

1. In view of the appeal filed on 9/22/03, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Shinozaki et al., hereinafter Shinozaki (US Patent 4,106,049).

Regarding claims 1 and 8, Shinozaki discloses in figure 5, an electronic component with shielding against stray electromagnetic fields, the electronic component comprising:

Art Unit: 2891

a ground potential terminal GND (shown in figure 1) for receiving an external ground potential;

a semiconductor chip having a semiconductor substrate 11 and 12 with an active upper side and a passive rear side having a surface area;

at least one ground lead 15 disposed within said semiconductor substrate and having at least one contact area contacting said upper side of said semiconductor substrate for connecting to said ground potential terminal; and

a continuous electrically conductive buried layer 13' having a surface area corresponding in size to said surface area of said passive rear side and entirely extending over said surface area, said buried layer disposed within said semiconductor substrate adjacent said passive rear side and connected to said ground potential terminal through said ground lead for providing a rear side shielding with said buried layer.

Regarding claim 5, an annular region 15, (the one other than the region 15 which is grounded) extends from the upper side of the substrate to the buried layer.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 2, 3, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinozaki.

Regarding claims 2 and 6, Shinozaki discloses the claimed invention, as discussed above, except for the impurity concentration in the buried and annular regions is 1 times  $10$  to the power of  $20$  ( $1/\text{cm}^3$ ). It would have been obvious to one of ordinary skill in the art at the time of the invention to make the regions to have such high concentration to make the component of the bipolar transistors less resistive, and consequently adjust the characteristics of the device for a particular application.

Regarding claim 3, the material forming the buried layer is identical to material forming the substrate (see column 4, lines 25-30).

Regarding claim 4, Shinozaki discloses the claimed invention, as discussed above, except for mono-crystalline silicon is used to form the substrate. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to use mono-crystalline silicon as the substrate, since polycrystalline structures have inherent crystal damage which could degrade the performance of the device. See *In re Leshin*, 125 USPQ for the proposition that it is within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

6. Claims 7, 9, and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinozaki as applied to claim 1 above, and further in view of Mertol (US Patent 5,866,943).

Regarding claims 7, 9 and 10, Shinozaki discloses the claimed invention, as discussed above, except for the chip being a component of a flip chip technique, has solder contacts, and includes a mounting device, which could be a ceramic substrate.

Mertol discloses in figure 3, flip-chip 10 has solder balls 13, which is mounted on a ceramic substrate 22. Therefore, it would have been obvious to one of ordinary skill in the art at

Art Unit: 2891

the time of the invention to implement the chip of the Shinozaki's structure in such a chip arrangement, since flip-chip configuration is well known in the art due to its advantages such as compactness.

Regarding claim 11, there are output contact areas (pads above the solder balls);

a wiring foil 30 with connecting lines (the vertical lines) disposed on said upper side of said semiconductor substrate, said contact area of said semiconductor chip is one of a plurality of contact areas and said connecting lines of said wiring foil connecting said contact area of said semiconductor chip to said output contact areas distributed on said wiring foil; and

solder formation selected from the group consisting of solder balls and solder contact bumps disposed on said output contact areas.

Regarding claim 12, a the potential which connects to the wiring foil would be ground (to ground the chip of the structure of Shinozaki).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2891

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Farahani



HOAI PHAM  
PRIMARY EXAMINER

FIG. 1

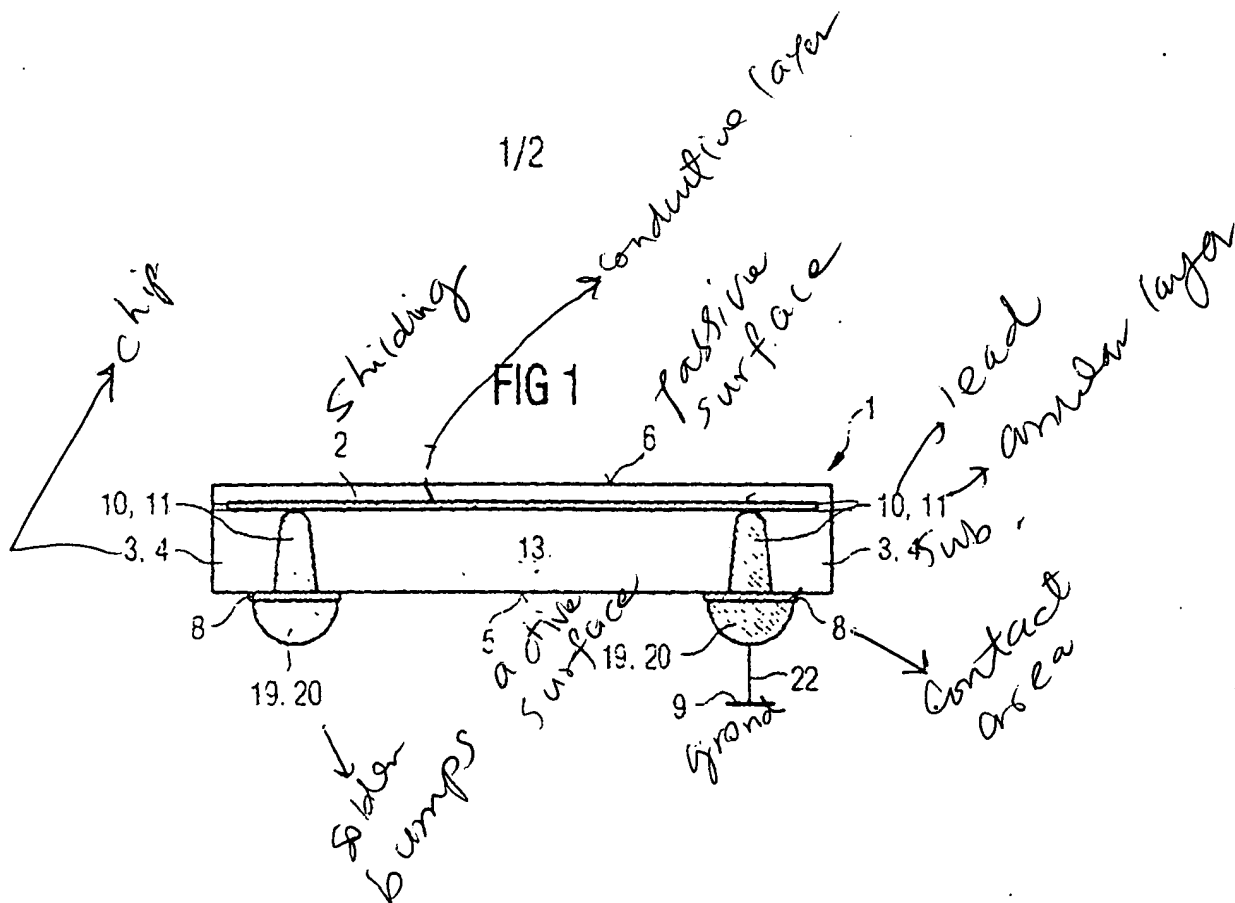


FIG 2

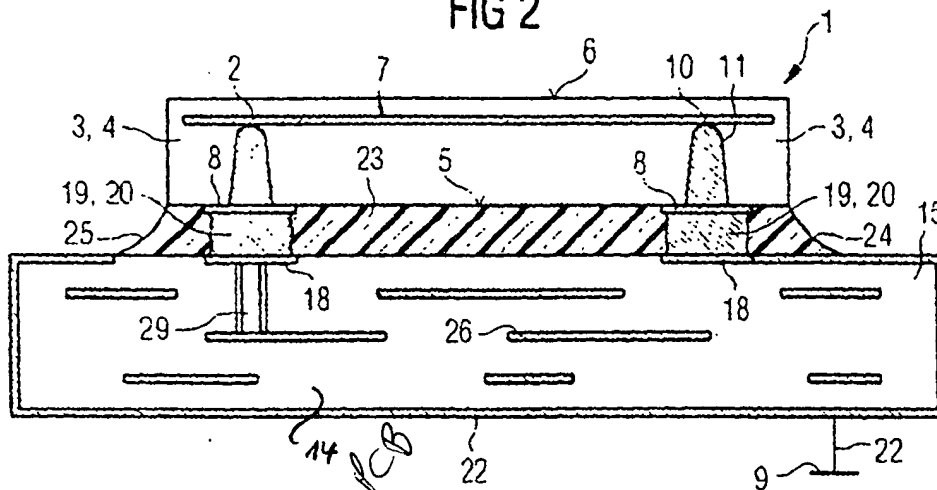


FIG 3

